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## Sheep and Lamb Death Loss in the United States, 2011

For the Sheep 2011 study, the U.S. Department of Agriculture's National Animal Health Monitoring System collected data on sheep health and management practices from a representative sample of operations in 22 of the Nation's major sheep-producing States, which were divided into three regions.<sup>1</sup> Collectively, these operations represented 85.5 percent of the U.S. ewe inventory and 70.1 percent of U.S. farms with ewes.

One objective of the Sheep 2011 study was to examine death losses in sheep and lambs. Understanding average levels and causes of mortality can help producers identify problems on their own operations and make changes in management practices that improve production efficiency.

### Sheep and lamb death losses

For an operation to be efficient, sheep and lamb death losses must be minimized. Usually, newborn lambs are the most vulnerable. Overall, 96.0 percent of lambs born in 2010 were born alive. Of the lambs born alive, 6.3 percent were lost (from any cause) before being marked, docked, or branded, and 4.9 percent were lost afterward. Losses before processing occurred on a higher percentage of all operations (49.2 percent) compared with losses after processing (36.8 percent).

Herded/open range operations lost the highest percentage of lambs (8.7 percent) before the lambs were marked, docked, or branded (table 1). Often, large herded/open range operations are unable to count lambs until the flock is processed and the lambs are docked, marked, or branded. As a result, some producers have difficulty estimating true lamb losses on herded/open range operations.

#### <sup>1</sup>Regions:

**West:** California, Oregon, Washington

**Central:** Colorado, Idaho, Kansas, Montana, New Mexico, South Dakota, Texas, Utah, Wyoming

**East:** Iowa, Kentucky, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Virginia, Wisconsin

#### <sup>2</sup>Flock sizes:

Very small (fewer than 20 ewes), small (20–99), medium (100–499), large (500 or more).

Dry lots lost the highest percentage of adult sheep compared with the other primary flock types (table 1). Overall, more than half of operations (53.8 percent) lost adult sheep, and losses on these operations represented 5.0 percent of the January 1, 2011, sheep inventory.

**Table 1. Percentage of lambs and sheep lost to all causes during 2010, by age group and by primary flock type**

	Percent Sheep and Lambs			
	Primary Flock Type			
	Herded/ open range	Fenced range	Pasture	Dry lot/ feedlot
Age group	Pct.	Pct.	Pct.	Pct.
Lambs before marked, docked, or branded	8.7	6.3	4.8	5.6
Lambs after marked, docked, or branded	5.2	5.7	4.5	1.0
Total lambs	13.9	12.0	9.3	6.6
Adult sheep	5.0	4.0	5.5	6.5

In general, large operations<sup>2</sup> had the lowest percentage of death losses in adult sheep (4.4 percent) and the highest percentage of death losses in lambs, both before and after lambs were marked, docked, or branded (7.2 and 5.4 percent, respectively) [table 2]. Very small operations had the highest adult-sheep death loss (6.3 percent) but the lowest percentage of lamb death loss after being marked, docked, or branded (3.8 percent). Small and medium operations had the lowest death loss of lambs before being marked, docked, or branded (5.4 percent).



**Table 2. Percentage of sheep and lambs lost to all causes during 2010, by age group and by operation size**

Age group	Percent Sheep and Lambs				
	Operation Size (number ewes)				All
	Very small (fewer than 20)	Small (20–99)	Medium (100–499)	Large (500 or more)	
Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Lambs before marked, docked, or branded	6.6	5.4	5.4	7.2	6.3
Lambs after marked, docked or branded	3.8	4.3	5.0	5.4	4.9
Total lambs	10.4	9.7	10.4	12.6	11.2
Adult sheep	6.3	6.0	5.0	4.4	5.0

Typically, sheep and lamb death losses are divided into two categories: losses due to nonpredator causes and losses due to predator causes. Overall, 47.2 and 13.2 percent of operations lost sheep to nonpredator and predator causes, respectively. In 2010, 53.2 percent of operations lost lambs to nonpredator causes, and 23.6 percent lost lambs to predators. The percentage of operations with nonpredator and predator lamb losses increased as operation size increased (fig. 1).

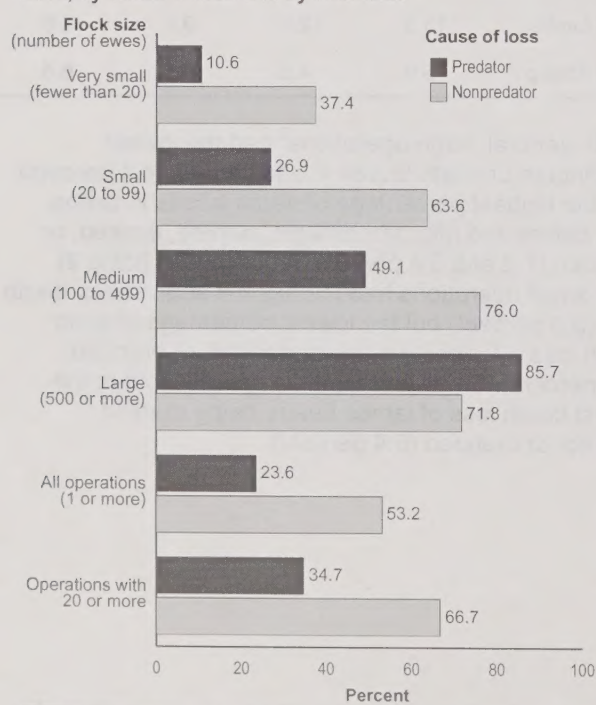
## Predator-caused death losses

In total, 1.2 percent of the January 1, 2011, adult-sheep inventory and 4.9 percent of lambs born were lost to predators. The majority of sheep and lamb predator losses were due to coyotes (51.8 and 60.8 percent, respectively) [table 3]. On very small operations, dogs accounted for 39.3 percent of adult-sheep death losses, but overall dogs accounted for just 13.0 percent of adult sheep lost to predators during 2010. Smaller operations are often housed close to urban areas, making it more likely that they will have contact with dogs, especially dogs that do not commonly interact with sheep and lambs.

**Table 3. Of the 1.2 percent of sheep and 4.9 percent of lambs lost to predators in 2010, percentage lost to the following predators**

Predator	Percent sheep losses	Percent lamb losses
Bears	9.1	3.3
Bobcats	3.4	8.3
Coyotes	51.8	60.8
Dogs	13.0	4.7
Mountain lions, cougars, or pumas	6.7	2.7
Foxes	0.9	3.9
Wolves	2.1	0.9
Eagles	0.7	5.8
Other	4.4	4.7
Unknown	8.0	4.9

**Figure 1. Percentage of operations that lost lambs during 2010, by cause of loss and by flock size**





## Nonpredator death losses

Producer-attributed, nonpredator causes of loss for adult sheep and lambs are listed in table 4.

**Table 4. Of the 3.8 percent of sheep and 6.3 percent of lambs lost to nonpredator causes during 2010, percentage lost to nonpredator causes:**

Nonpredator cause	Percent sheep	Percent lambs
Enterotoxemia	2.2	6.2
Internal parasites	9.6	7.4
Other digestive problems	4.4	6.2
Respiratory problems	6.1	12.0
Metabolic problems	1.2	1.2
Other disease problems	6.4	2.1
Weather-related causes	8.5	27.3
Lambing problems	13.6	12.6
Old age	22.1	NA
Being on back	2.9	0.3
Poisoning	3.0	2.0
Theft	1.5	1.1
Other nonpredator causes	4.5	6.6
Unknown nonpredator causes	14.1	15.2
Total	100.0	100.0

Just 23.9 percent of operations had a private veterinarian visit in 2010, which may help explain the relatively high percentage of unknown causes of loss (14.1 percent of adult sheep and 15.2 percent of lambs). The low occurrence of veterinarian visits might also have resulted in some miscategorization of death losses.

For the 3.8 percent of adult sheep lost to nonpredator causes, 22.1 percent were lost to old age, 13.6 percent to lambing problems, 9.6 percent to internal parasites, and 8.5 percent to weather-related causes.

For the 6.3 percent of lambs lost to nonpredator causes, weather-related causes accounted for the highest percentage of lamb losses (27.3 percent), especially on large operations where 37.5 percent of nonpredator lamb losses were due to weather-related causes.

Death losses due to internal parasites were highest in sheep managed on pasture (15.3 percent) and fenced range (11.9 percent). This result is expected as these environments are conducive to the common internal parasite life cycles that can cause mortalities.

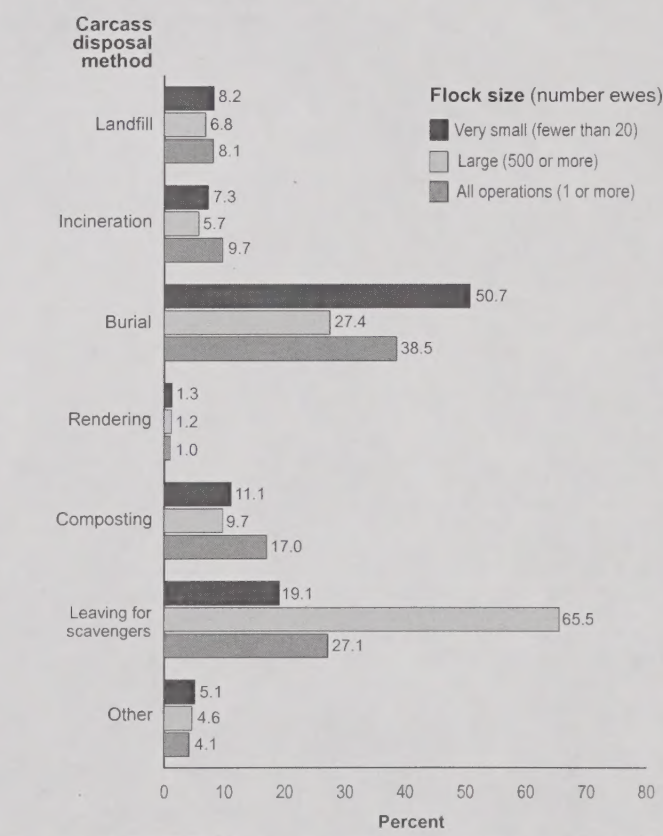
## Record keeping

Accurate record keeping is an important tool for monitoring causes of death. Nearly all operations (86.7 percent) kept handwritten and/or computerized production records in 2010. For these operations, 68.4 percent tracked health and treatment/vaccination practices, and 79.7 percent recorded the number of animals that died or were culled during the year.

## Carcass disposal

Carcass-disposal methods often depend on local, county, and State laws; a producer's skill/knowledge of disposal methods (incineration and composting); and equipment availability (burying and rendering). The cost of different carcass-disposal methods also influences a producer's decision, although the cost of disposing an adult sheep is far lower than the cost of disposing larger livestock animals. Of operations that had any losses during 2010, the two most common methods of carcass disposal were burial and leaving for scavengers (38.5 and 27.1 percent of operations, respectively) [fig. 2].

**Figure 2. For operations that had any sheep deaths during 2010, percentage of operations by carcass-disposal method used and by flock size**





## Summary

An accurate diagnosis and recording of each sheep or lamb death loss is important for producers, as this knowledge provides them with an opportunity to recognize risks and reassess management strategies that can be effective in reducing death losses. An effective flock health and production management program would typically include biosecurity practices to prevent the introduction and/or spread of disease agents, and nutrition and preventive health programs to improve disease resistance. Predators are also a significant cause of animal loss for producers, especially for those who manage their flocks on large herded/open or fenced range operations.

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